RHEIN TECH LABORATORIES, INC.

Engineering Solutions & Electromagnetic Compatibility Services

Certification Application Report
FCC Part 15.247 & ISED Canada RSS-247

Test Lab:	Applicant:
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FCC ID/ IC	LS3-146781/ 2938A-146781	**Test Report Date**	September 9, 2022
Platform	N/A	**RTL Work Order #**	2022079
Model	146-78-1	**RTL Quote #**	QRTL22-079A
American National Standard Institute	ANSI C63.10-2020: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices		
FCC Classification	DTS – Part 15 Digital Transmission System		
FCC Rule Part(s)/Guidance	FCC 15.247:Operation within the bands 902 – 928 MHz, 2400.0 – 2483.5 MHz, and 5725 – 5850 MHz (10/01/2020)		
ISED Canada	RSS-247 Issue 2: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus		

Frequency Range (MHz)	Output Power (mW)*	Frequency Tolerance	Emission Designator
2405 – 2480	6.0	N/A	2M76FXD

** power is peak conducted*

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, ISED Canada RSS-247, RSS-Gen, and ANSI C63.10.

Signature: 

Date: September 9, 2022

Typed/Printed Name: Desmond A. Fraser

Position: President

This report may not be reproduced, except in full, without the written approval of Rhein Tech Laboratories, Inc., and Hunter Engineering Company. The test results relate only to the item(s) tested This report replaces R0.5.

These test(s) are accredited under Rhein Tech Laboratories, Inc. ISO/IEC 17025 accreditation issued by ANAB. Refer to certificate and scope of accreditation AT-1445.

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1 General Information

1.1 Scope

This is an original FCC and ISED Canada certification application report.

Applicable Standards:

- FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz
- ISED Canada RSS-247: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
- ISED Canada RSS-Gen: General Requirements for Compliance of Radio Apparatus

1.2 Description of EUT

Equipment Under Test	Transceiver
Model	146-78-1
Power Supply	2 AA batteries (1.5V each)
Modulation Type	DSSS
Frequency Range	2405 – 2480 MHz
Antenna Types	PCB inverted F, +3.3 dBi

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170.

ISED CAB ID: US0079, Company Number: 2956A

1.4 Related Submittal(s)/Grant(s)

This is an original application for Hunter Engineering Company Model 146-78-1, FCC ID: LS3-146781, IC: 2938A-146781.

1.5 Modifications

No modifications were made to the equipment during testing in order to achieve compliance with these standards.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested:

Table 2-1: Channels Tested

Channel	Frequency
Low	2405
Middle	2440
High	2480

2.2 Exercising the EUT

The EUT was supplied with test firmware programmed with a high, mid, and low channel for testing. The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15 Subpart C (Section 15.247); RSS-247

FCC Standard	IC Standard	Test	Pass/Fail or N/A
15.247(b)(3)	RSS-247 5.4(d) RSS-Gen 6.12	Maximum Peak Power Output	Pass
15.247(d)	RSS-247 5.5	Band Edge Measurement	Pass
15.247(d)	RSS-247 5.5	Antenna Conducted Spurious Emissions	Pass
15.247(a)(2)	RSS-247 5.2(a)	6 dB Bandwidth	Pass
15.247(e)	RSS-247 5.2(b)	Power Spectral Density	Pass
15.207	RSS-Gen 8.8	AC Power Conducted Emissions	N/A
15.209	RSS-247 5.5 RSS-Gen 6.13/7.3/8.9/8.10	Radiated Emissions	Pass
N/A	RSS-Gen 6.7/ TRC-43	99% Bandwidth	N/A

2.4 Test System Details

The test samples were received on August 9, 2022. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following table.

Table 2-3: Equipment under Test

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Transceiver (Antenna Conducted)	Hunter Engineering Company	146-78-1	N/A	LS3-146781	N/A	24152
Transceiver (Radiated)	Hunter Engineering Company	146-78-1	N/A	LS3-146781	N/A	24151

2.5 Configuration of Tested System

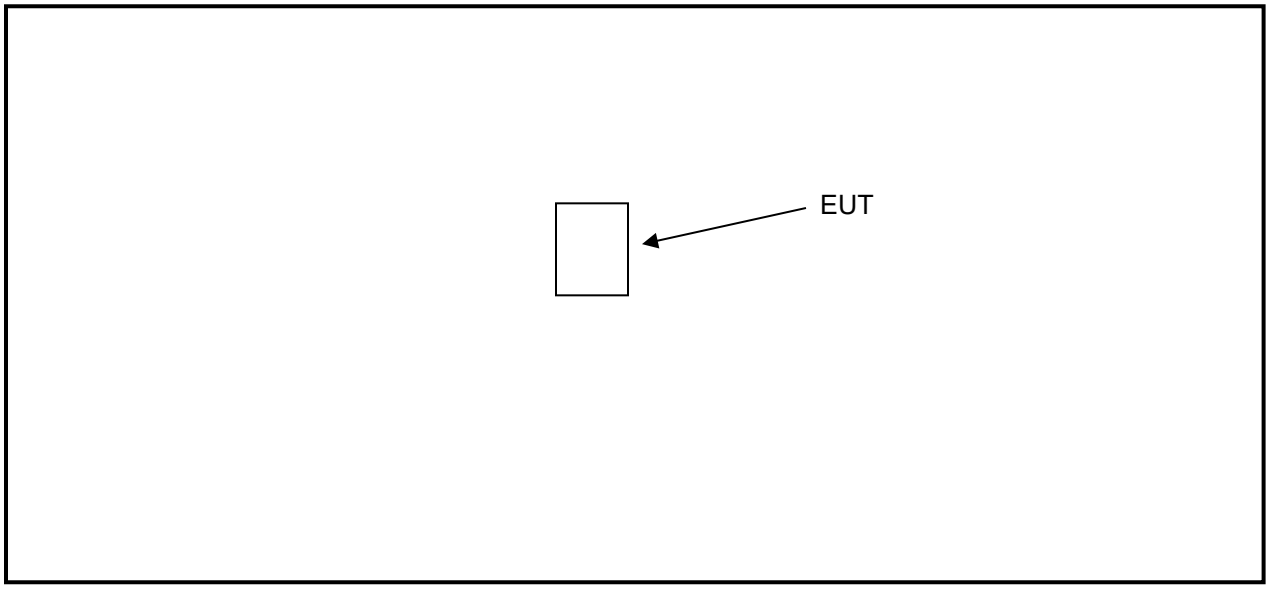


Figure 2-1: Configuration of System under Test

3 Peak Output Power – FCC 15.247(b)(3); IC RSS-247 5.4(d), RSS-Gen 6.12

3.1 Power Output Test Procedure

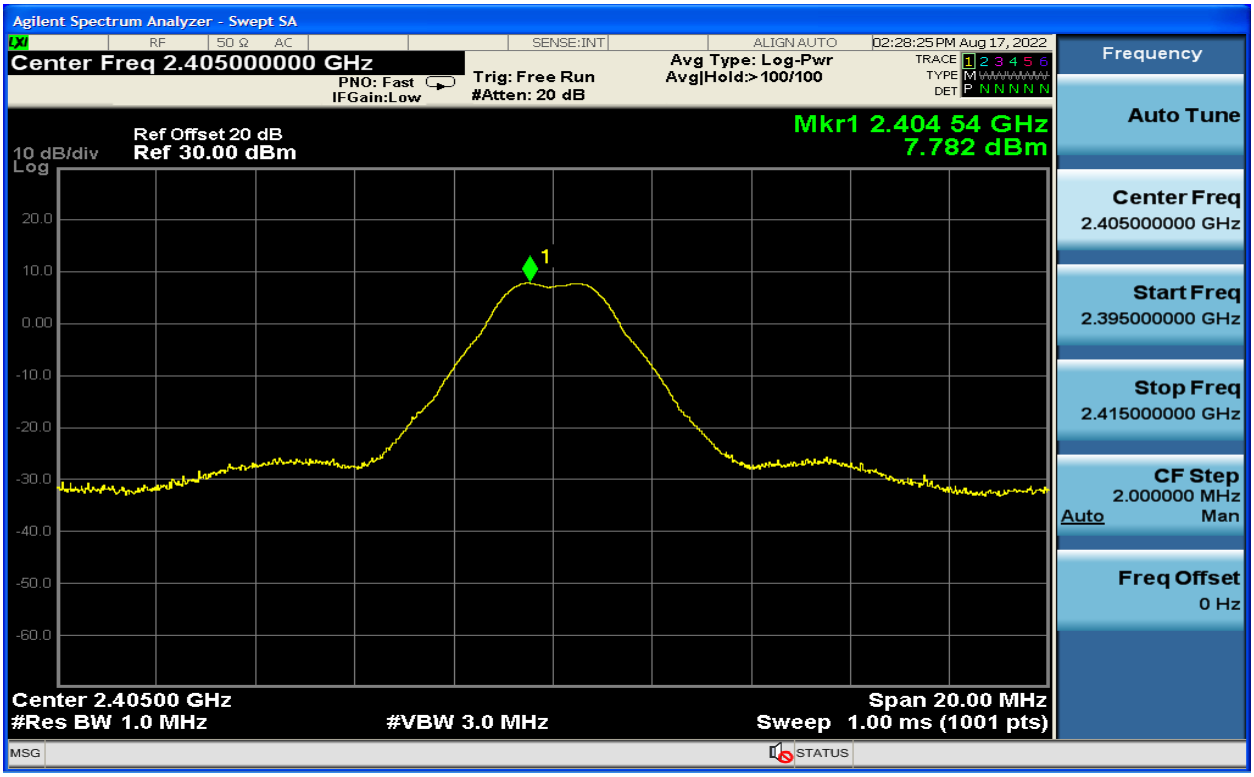
A conducted antenna port power measurement of the EUT was taken per ANSI C63.10 11.9.1.1.

3.2 Power Output Test Data

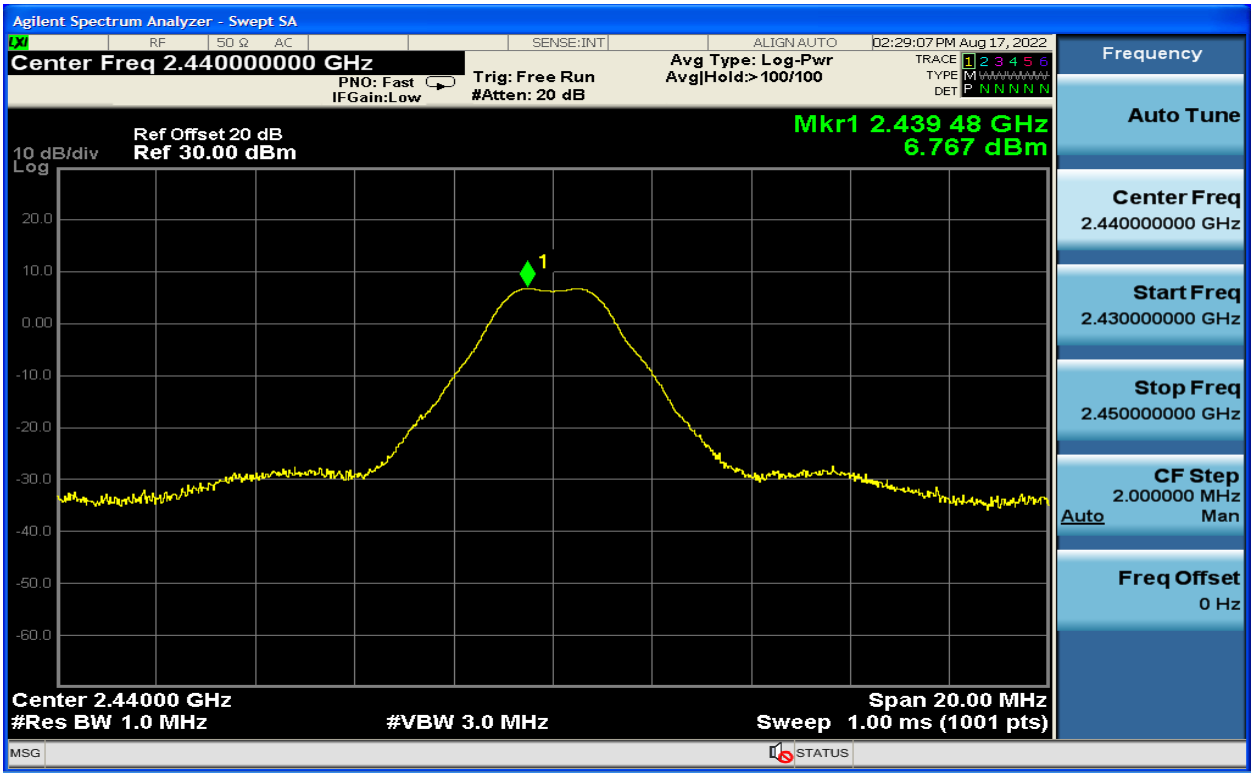
Table 3-1: Power Output Test Data

Channel	Frequency (MHz)	Peak Power Conducted Output (dBm)
Low	2405	7.8
Middle	2440	6.8
High	2480	5.8

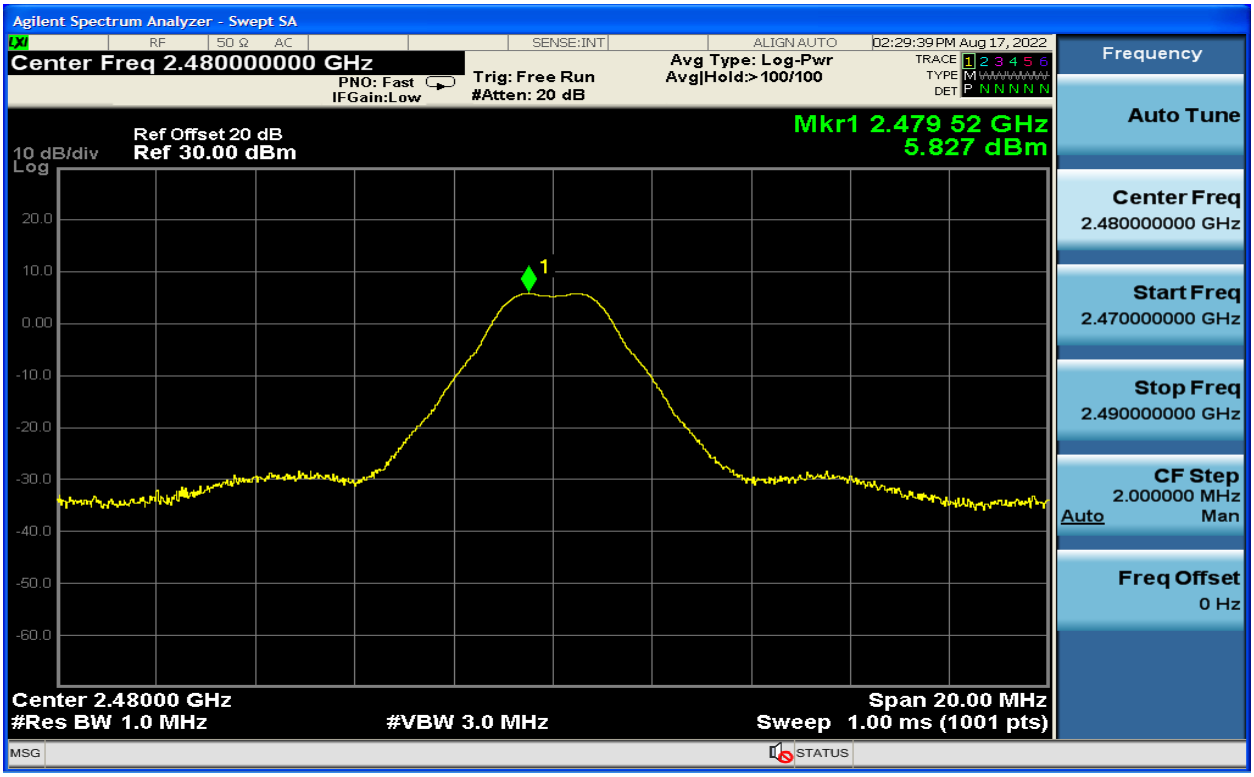
Plot 3-1: Power - 2405 MHz



Plot 3-2: Power - 2440 MHz



Plot 3-3: Power - 2480 MHz



Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±0.8 dB.

Table 3-2: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent	N9010A	Spectrum Analyzer	MY51250846	10/04/2024
901521	MA/COM	2082-6174-20	Attenuator, 20 dB	N/A	09/20/2022

Test Personnel:

Khue Do		August 17, 2022
Test Engineer	Signature	Date of Test

4 Compliance with the Band Edge – FCC 15.247(d); RSS-247 5.5

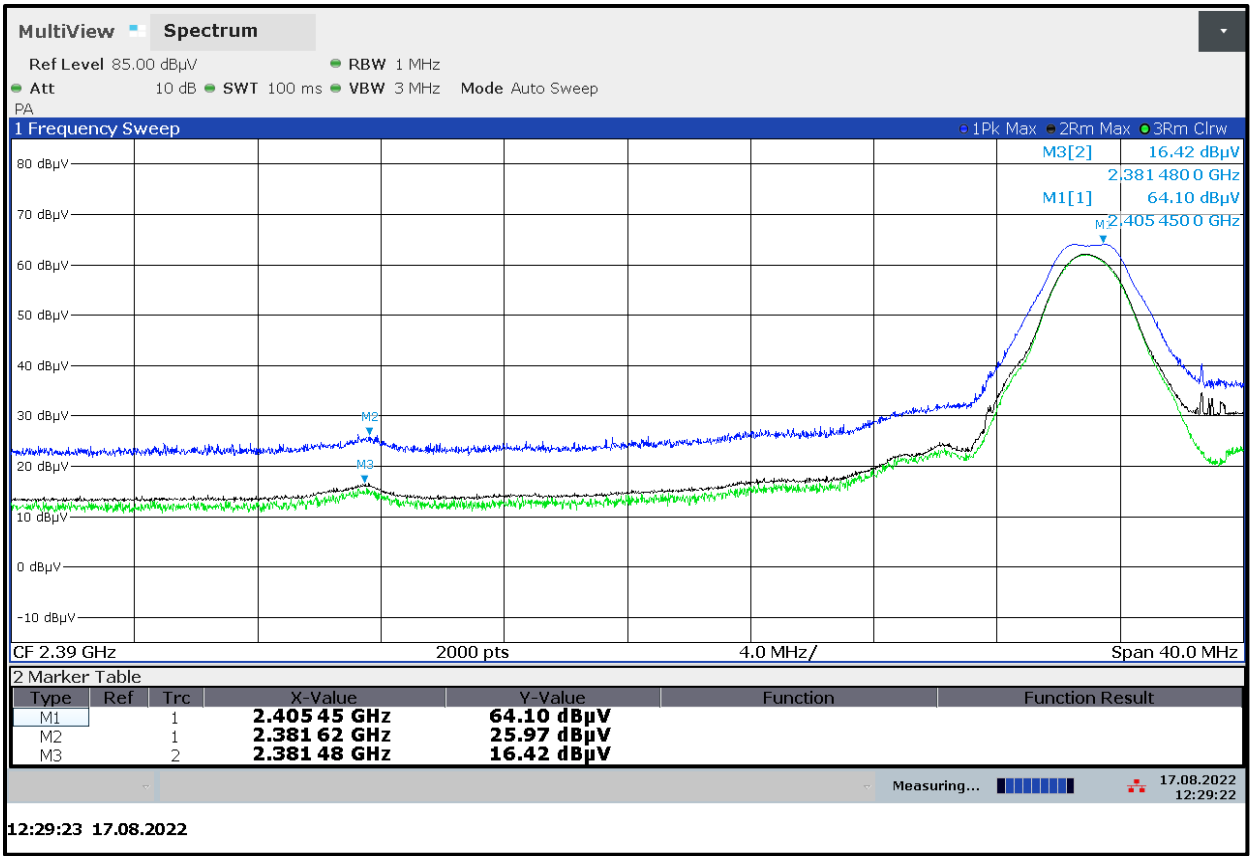
4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. A radiated measurement was performed from the highest peak within the restricted band, the result was compared to the limit per ANSI C63.10 11.12.

4.2 Band Edge Test Results

4.2.1 Lower Band Edge

Plot 4-1: Lower Band Edge



4.2.2 Upper Band Edge

Plot 4-2: Upper Band Edge

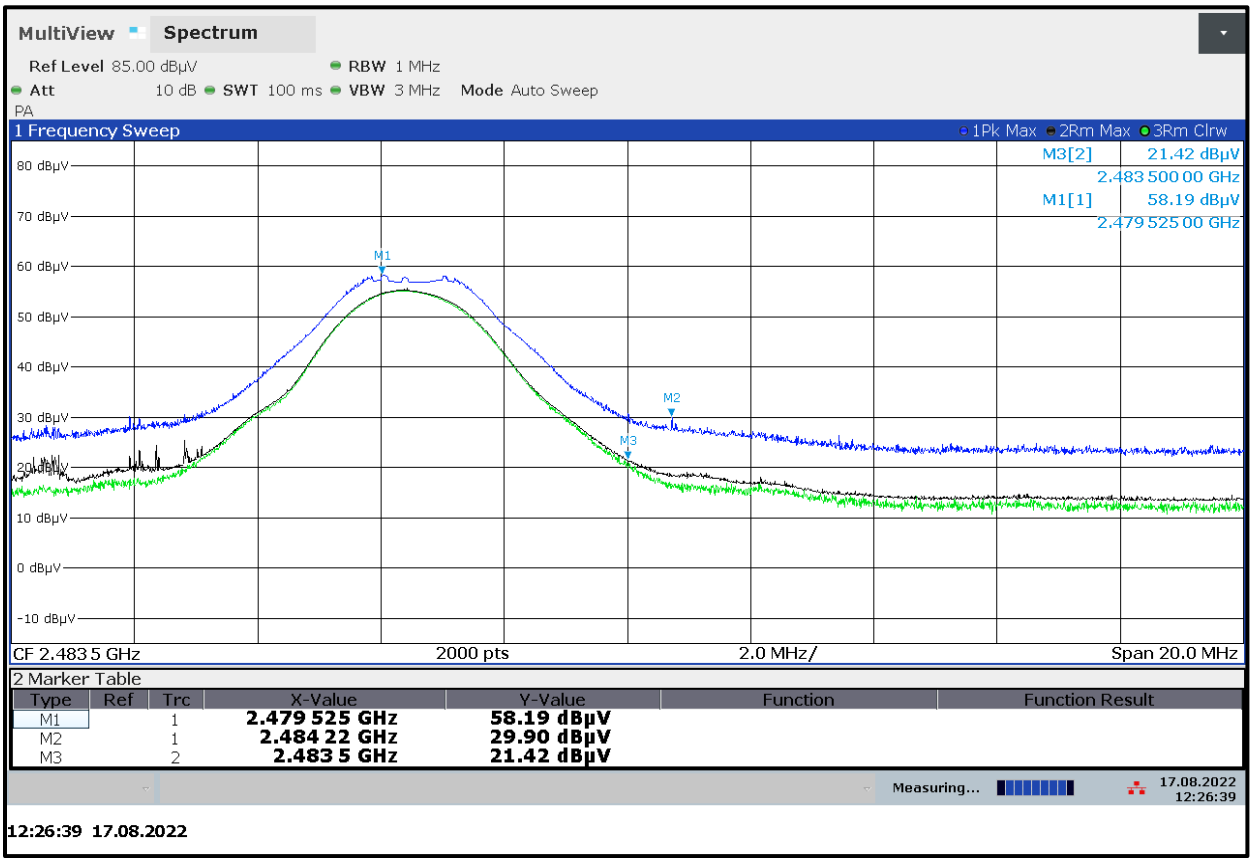


Table 4-1: Band Edge Results

Emission Frequency (MHz)	Detector	Analyzer Reading (dBµV)	Site Correction Factor (dB/m)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2381.480	Average	16.4	26.3	42.7	54.0	-11.3
2483.500		21.4	26.6	48.0	54.0	-6.0
2381.480	Peak	26.0	26.3	52.3	74.0	-21.7
2483.500		29.9	26.6	56.5	74.0	-17.5

Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±4.6 dB.

Table 4-2: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Laboratories	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901729	Insulated Wire Inc.	KPS-1503-3150-KPR	SMK RF Cables 20'	NA	12/06/2022
901242	Rhein Tech Laboratories	WRT-000-0003	Wood rotating table	N/A	Not Required
901773	Rohde & Schwarz	FSW50	Spectrum Analyzer	101021	02/02/2025

Test Personnel:

Khue Do		August 17, 2022
Test Engineer	Signature	Date of Test

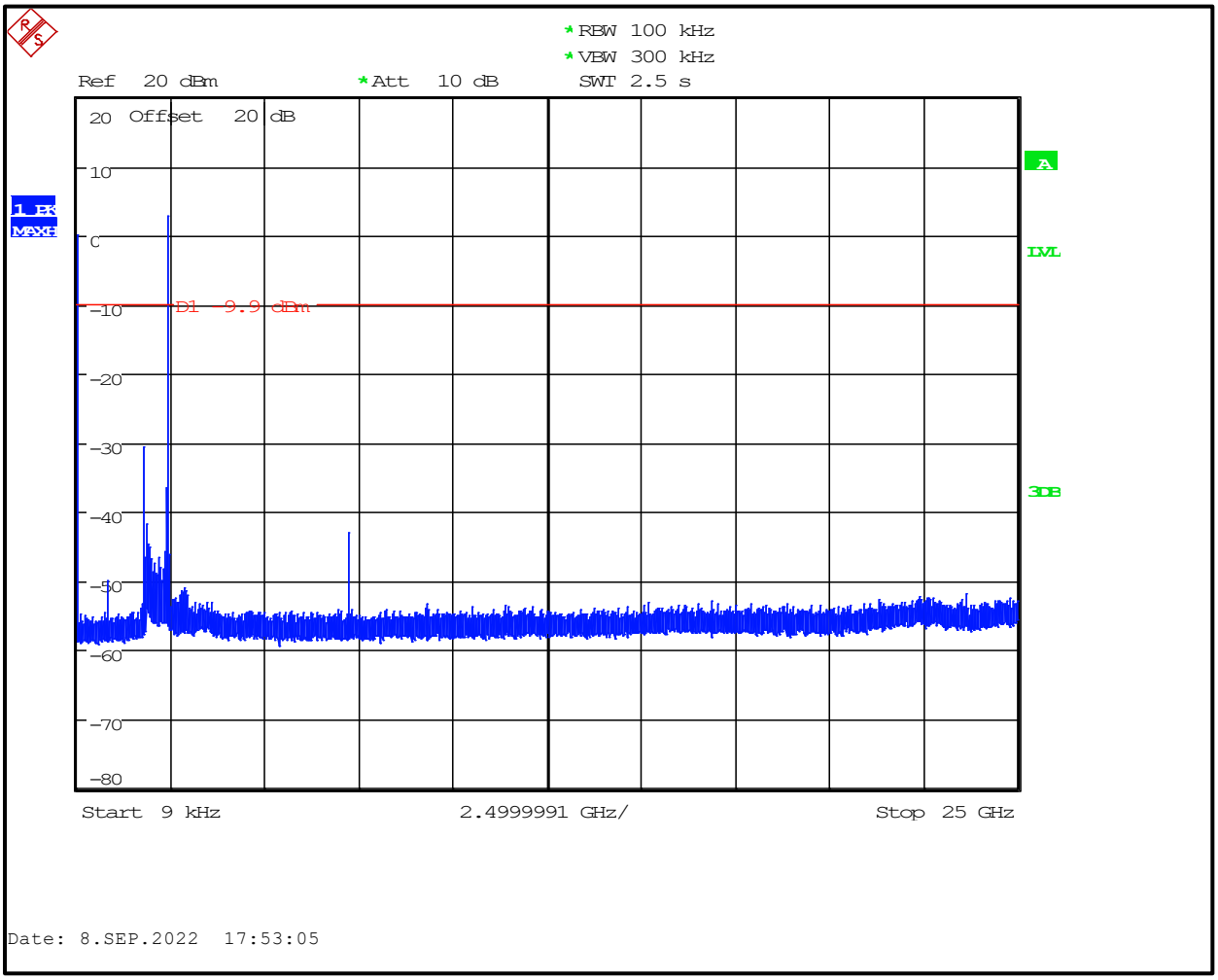
5 Antenna Conducted Spurious Emissions - FCC 15.247(d); RSS-247 5.5

5.1 Antenna Conducted Spurious Emissions Test Procedures

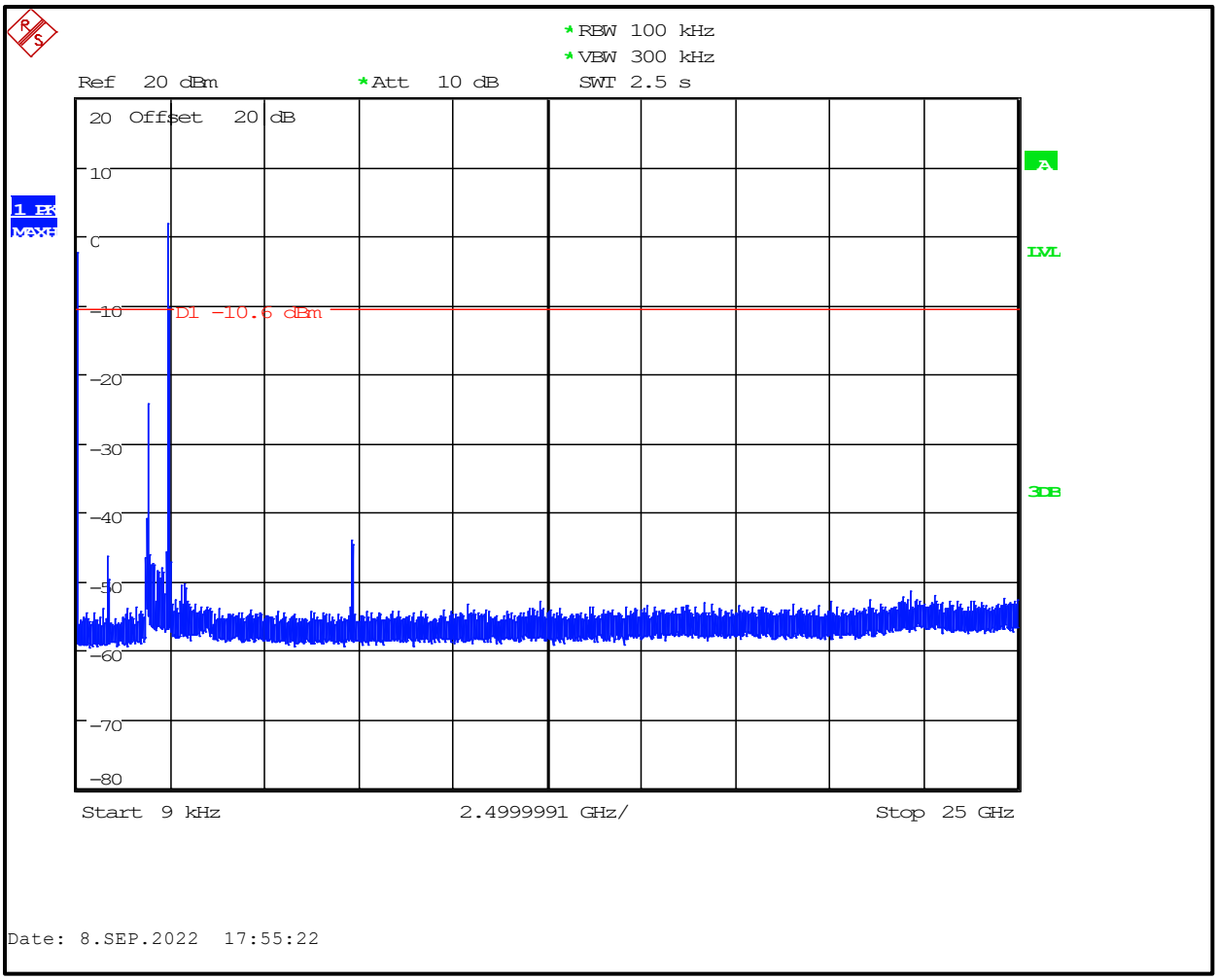
Antenna spurious emissions per FCC 15.247(d) and C63.10 6.7 were measured from the EUT antenna port using a 50-ohm spectrum analyzer. The modulated carrier was identified at the following frequencies: 2405 MHz, 2440 MHz and 2480 MHz.

5.2 Antenna Conducted Spurious Emissions Data

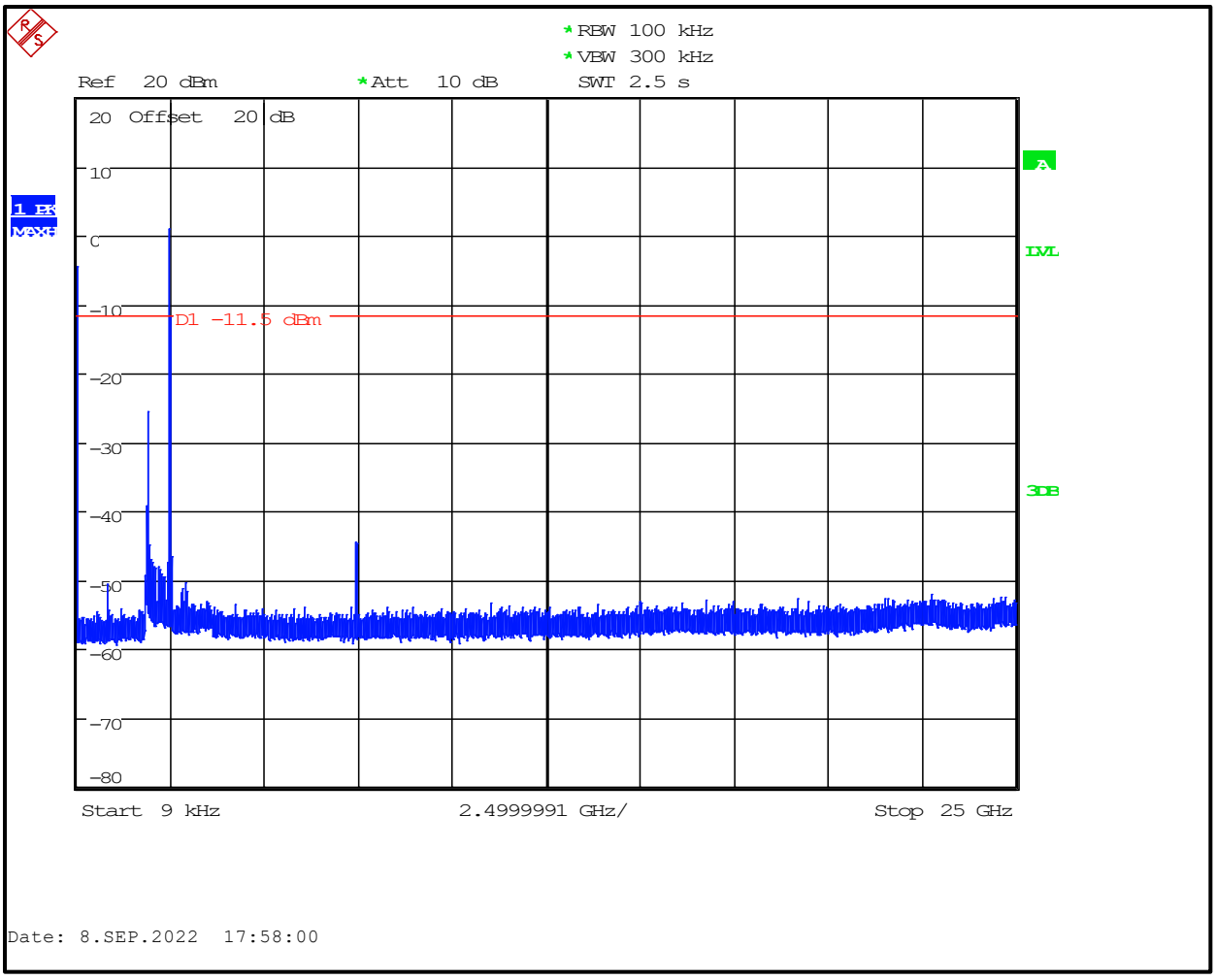
Plot 5-1: Antenna Conducted Spurious Emissions – 2405 MHz



Plot 5-2: Antenna Conducted Spurious Emissions – 2440 MHz



Plot 5-3: Antenna Conducted Spurious Emissions – 2480 MHz



Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±0.8 dB.

Table 5-1: Antenna Conducted Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901521	MA/COM	2082-6174-20	Attenuator, 20 dB	N/A	09/20/2022
901581	Rohde & Schwarz	1166.1660.50	Spectrum Analyzer (20 Hz – 50 GHz)	200106	12/01/2024

Test Personnel:

Khue Do		September 8, 2022
Test Engineer	Signature	Date of Test

6 Occupied Bandwidth – RSS-Gen 6.7

6.1 99% Bandwidth Test Procedure

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

• The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

• The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.

• The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

• The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

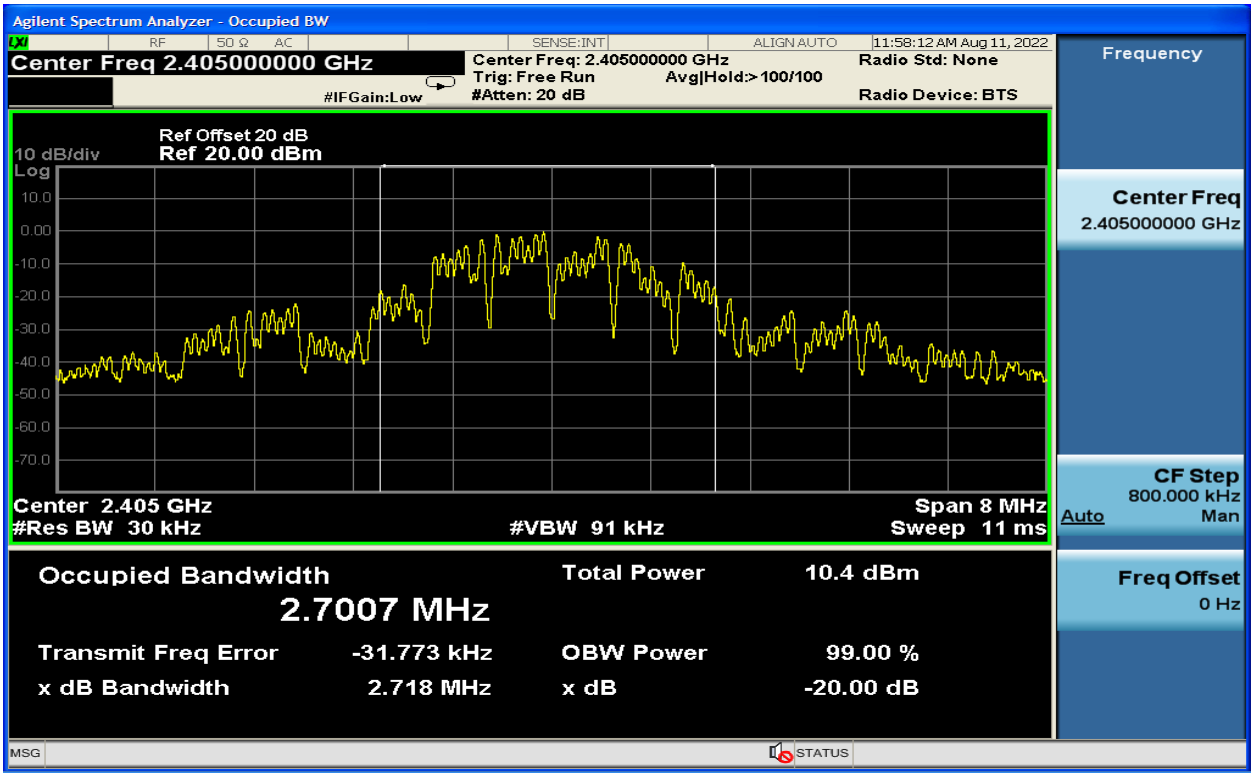
Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

6.2 99% Bandwidth Test Results

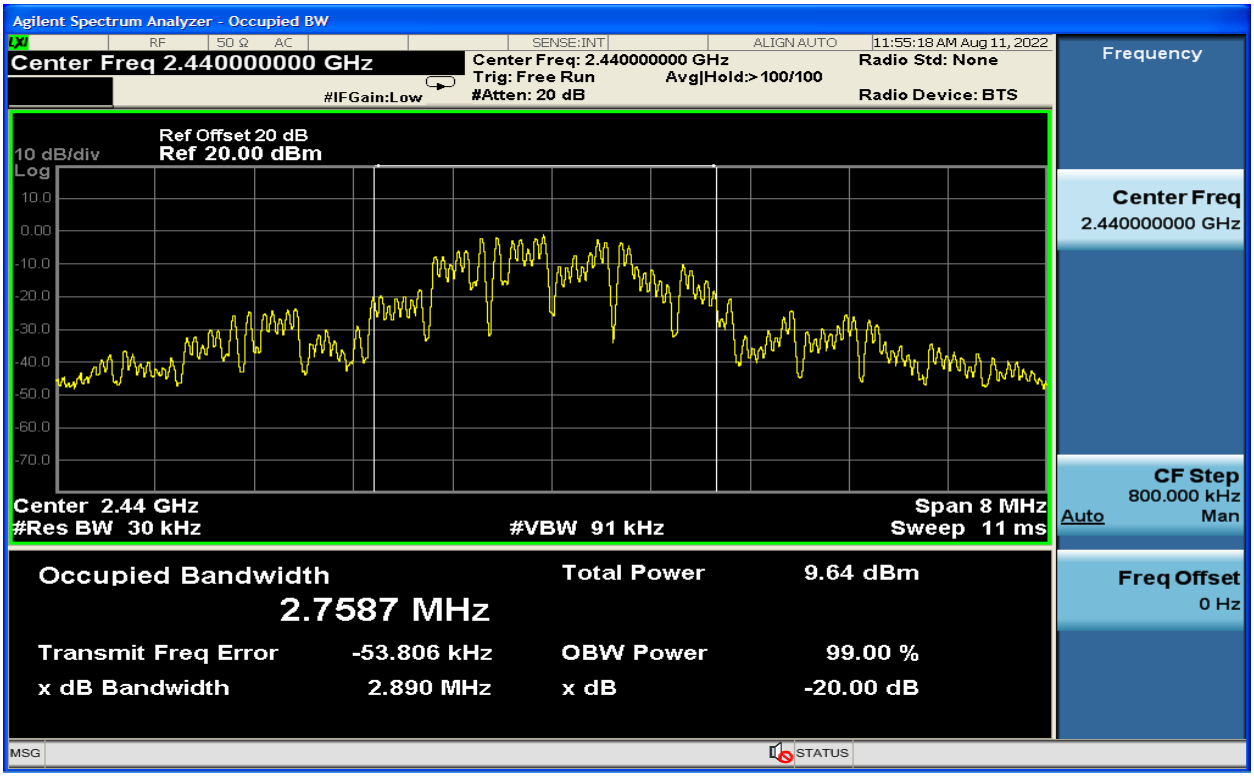
Table 6-1: 99% Bandwidth Test Data

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.701
Middle	2440	2.759
High	2480	2.749

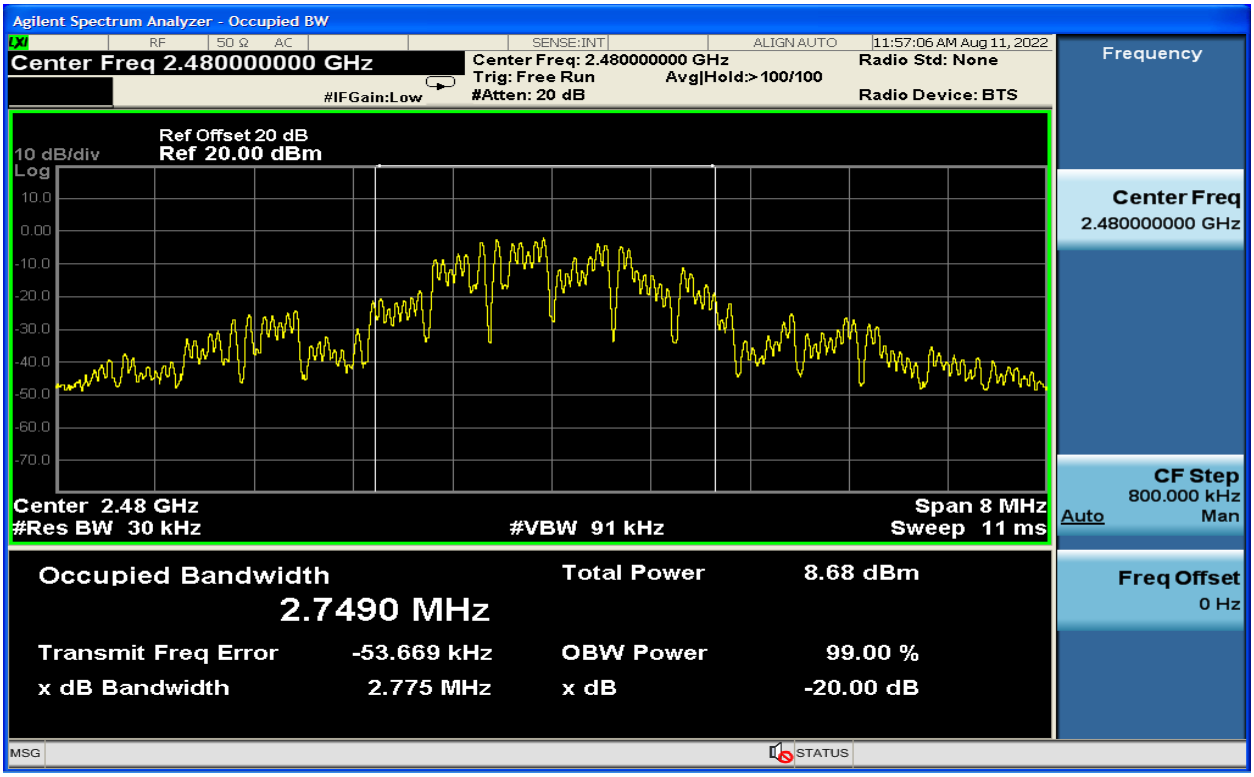
Plot 6-1: 99% Bandwidth, 2405 MHz



Plot 6-2: 99% Bandwidth, 2440 MHz



Plot 6-3: 99% Bandwidth, 2480 MHz



Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±1.0 x 10^{-6} Hz.

Table 6-2: 99% Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent	N9010A	Spectrum Analyzer	MY51250846	10/04/2024
901521	MA/COM	2082-6174-20	Attenuator, 20 dB	N/A	09/20/2022

Test Personnel:

Khue Do		August 11, 2022
Test Engineer	Signature	Date of Test

7 6 dB Bandwidth - 15.247(a)(2); RSS-247 5.2(a)

7.1 6 dB Bandwidth Test Procedure – Minimum 6 dB Bandwidth

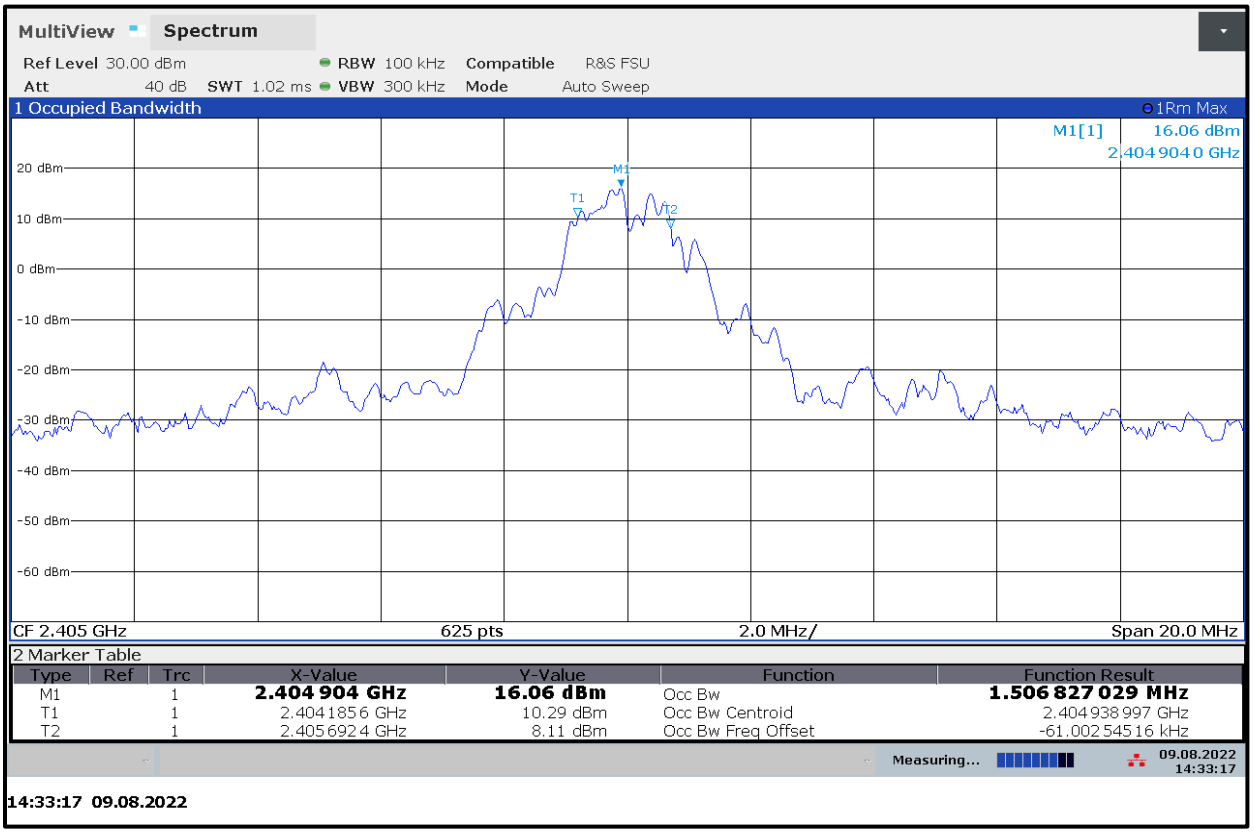
The minimum 6 dB bandwidths per FCC 15.247(a)(2) were measured per ANSI C63.10 11.8 using a 50-ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The device was modulated. The minimum 6 dB bandwidths are presented below.

7.2 6 dB Bandwidth Test Results

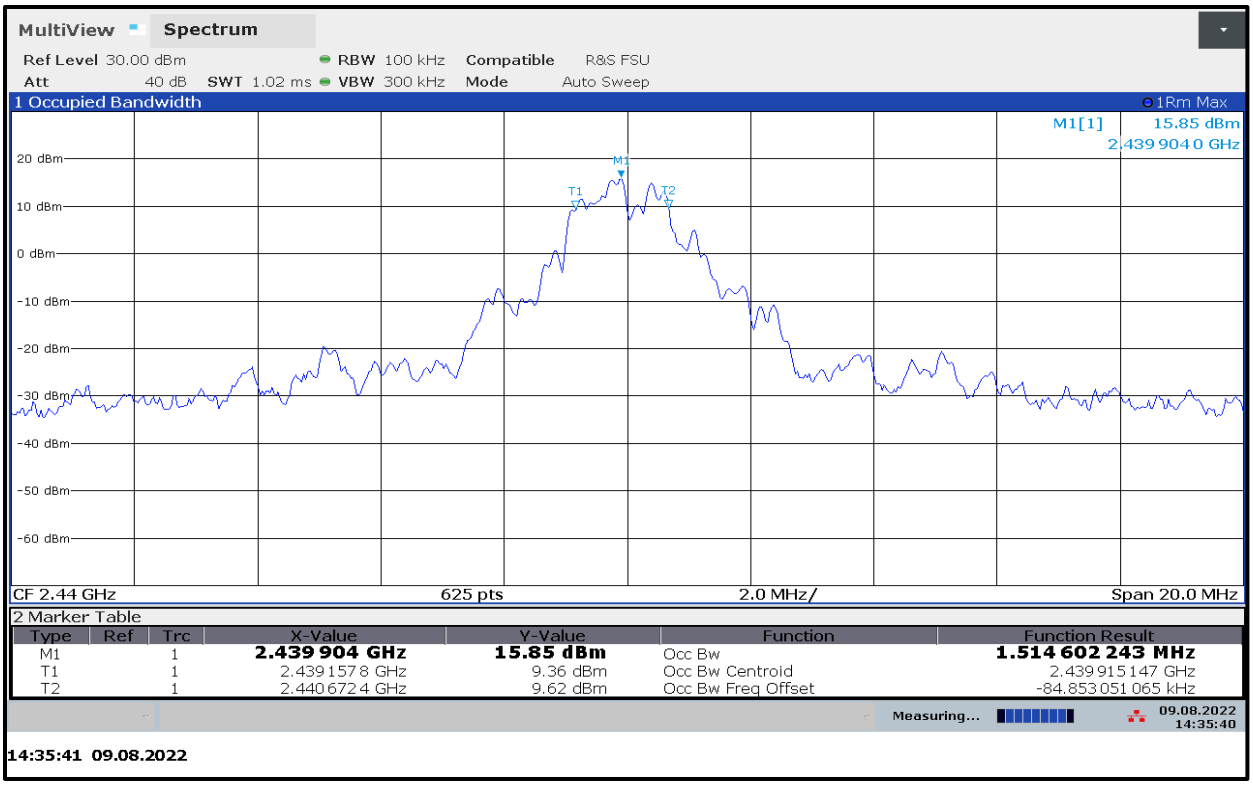
Table 7-1: 6 dB Bandwidth Test Data

Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
2405	1.5	0.5	Pass
2440	1.5	0.5	Pass
2480	1.5	0.5	Pass

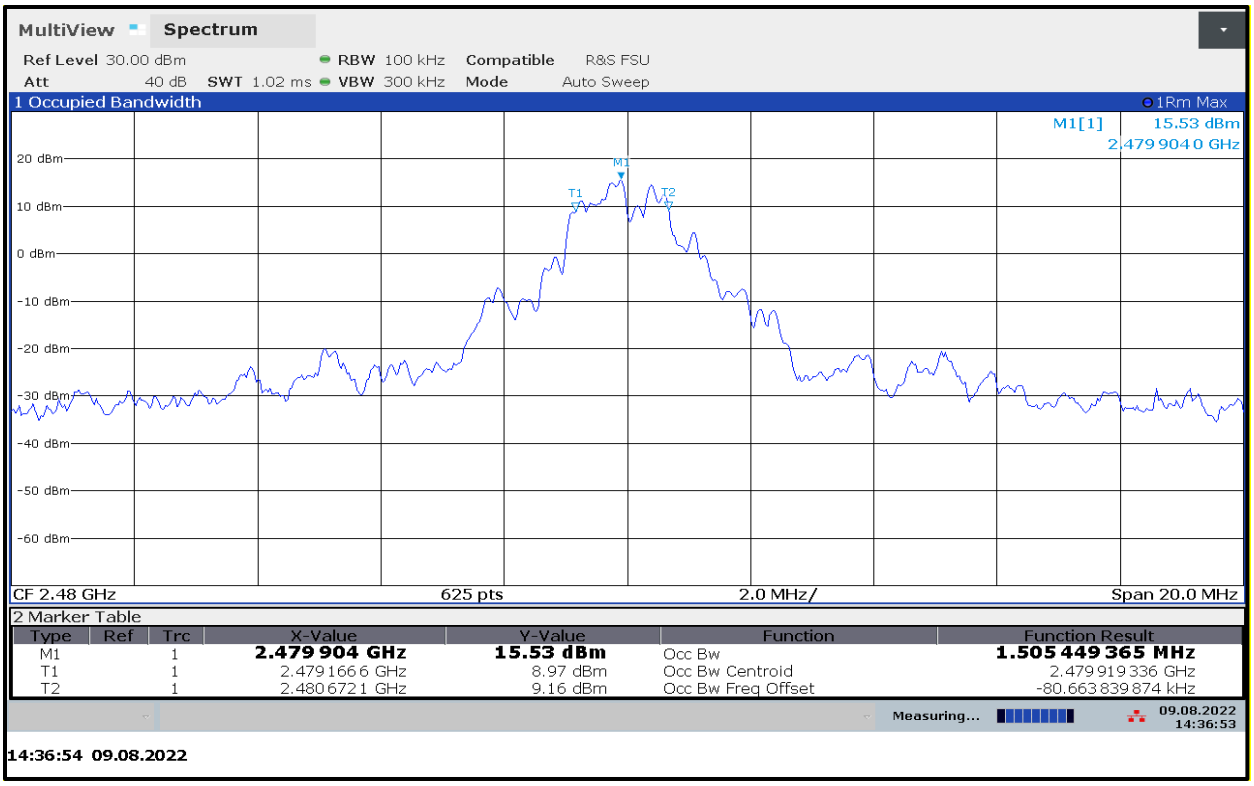
Plot 7-1: 6 dB Bandwidth – 2405 MHz



Plot 7-2: 6 dB Bandwidth – 2440 MHz



Plot 7-3: 6 dB Bandwidth – 2480 MHz



Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±1.0 x 10^{-6} Hz.

Table 7-2: 6 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901773	Rohde & Schwarz	FSW50	Spectrum Analyzer	101021	02/02/2025

Test Personnel:

Dan Baltzell		August 9, 2022
Test Engineer	Signature	Date of Test

8 Power Spectral Density - 15.247(e); RSS-247 5.2(b)

8.1 Power Spectral Density Test Procedure

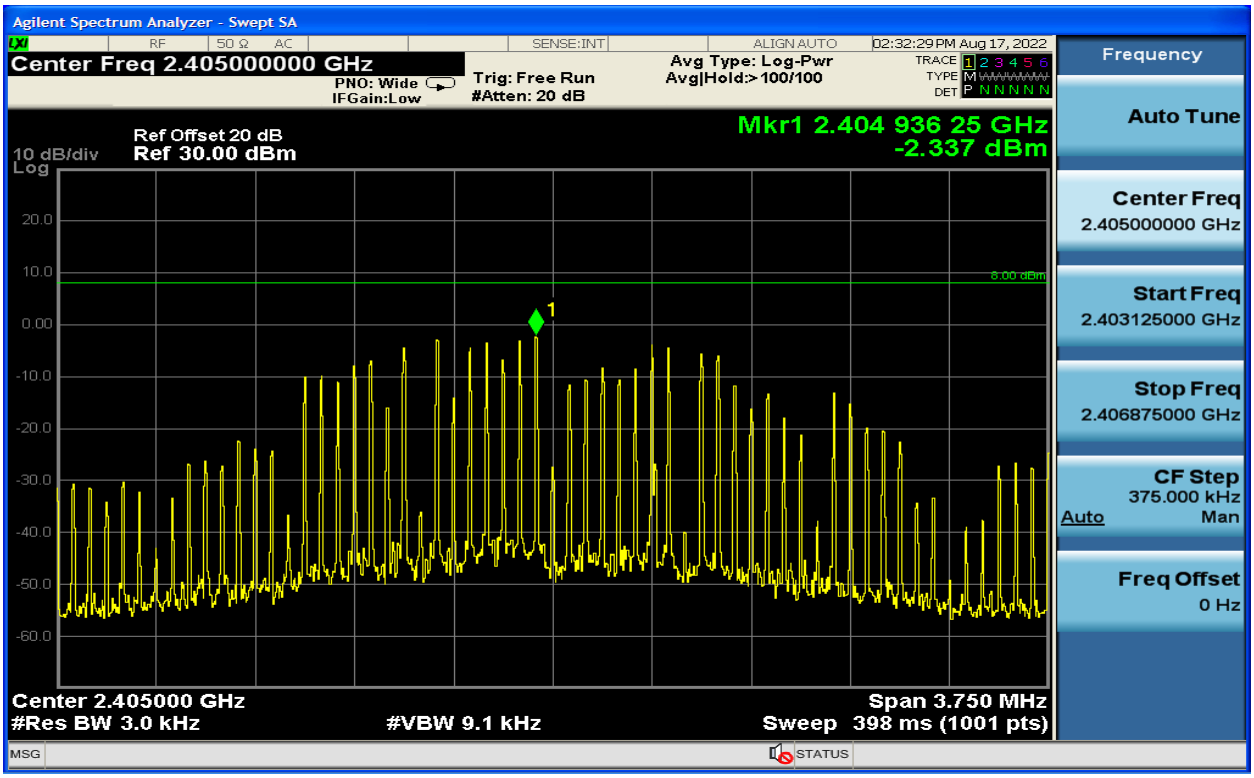
The power spectral density per FCC 15.247(e), and ANSI C63.10 11.10.2, was measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 3 kHz, the video bandwidth set at 30 kHz, and auto sweep time, using peak detector in max hold. The power spectral densities are presented for the modulated carriers at 2405, 2440 and 2480 MHz. These levels are below the +8 dBm limit. See the power spectral density table and plots.

8.2 Power Spectral Density Test Data

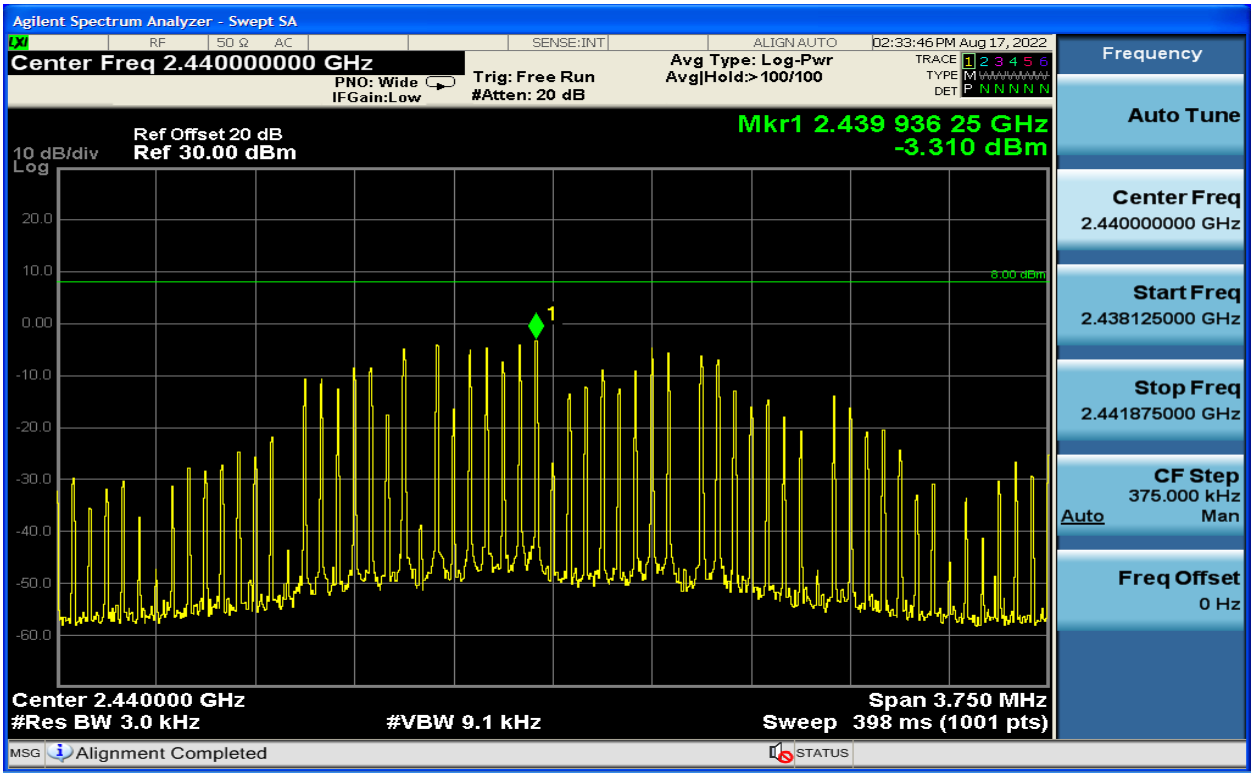
Table 8-1: Power Spectral Density Test Data

Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
2405	-2.3	8.0	Pass
2440	-3.3	8.0	Pass
2480	-4.3	8.0	Pass

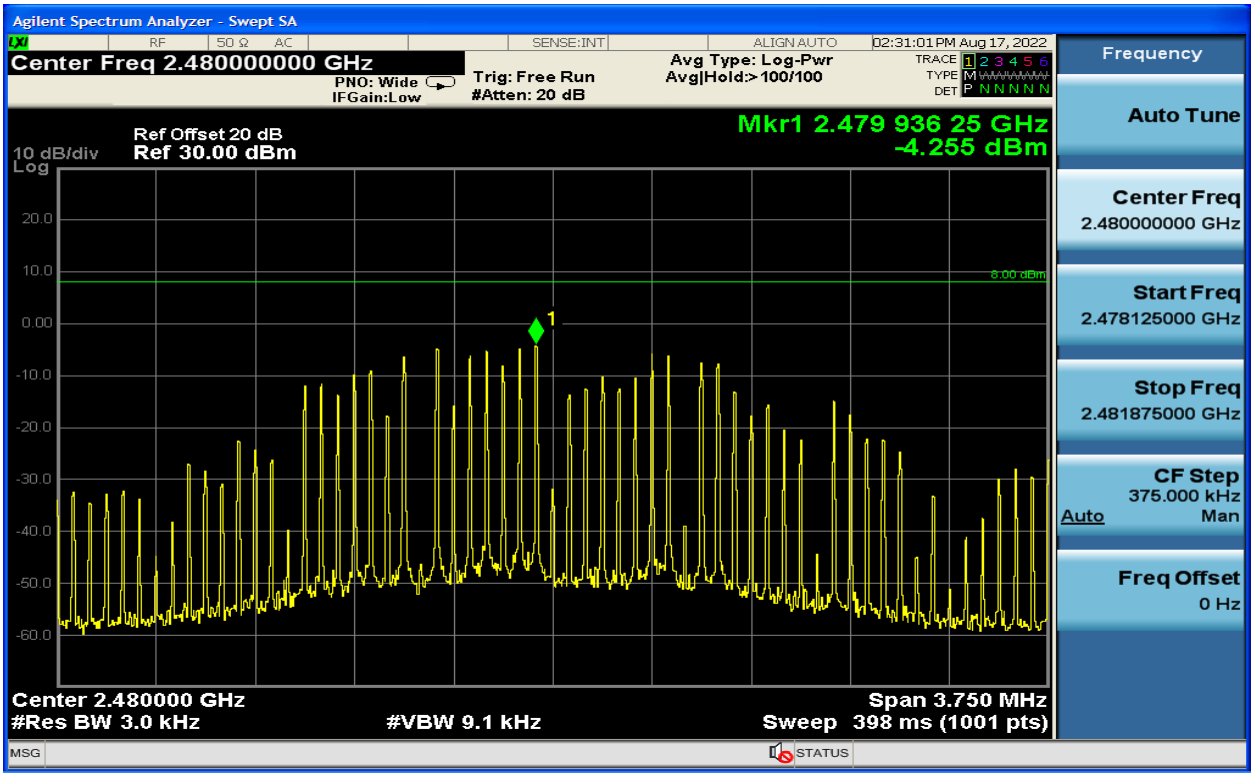
Plot 8-1: Power Spectral Density – 2405 MHz



Plot 8-2: Power Spectral Density – 2440 MHz



Plot 8-3: Power Spectral Density – 2480 MHz



Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±0.8 dB.

Table 8-2: Power Spectral Density Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901583	Agilent	N9010A	Spectrum Analyzer	MY51250846	10/04/2024
901521	MA/COM	2082-6174-20	Attenuator, 20 dB	N/A	09/20/2022

Test Personnel:

Khue Do		August 17, 2022
Test Engineer	Signature	Date of Test

9 Conducted Emissions Measurement Limits – FCC 15.207; RSS-Gen 8.8

No conducted emissions required since the unit is battery operated.

10 Radiated Emissions - FCC 15.209; RSS-247 5.5; RSS-Gen 6.13/7.3/8.9/8.10

10.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

10.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane for emissions less than 1 GHz, for emissions greater than 1 GHz the EUT was placed on a nonconductive turntable 1.5 m high. The spectrum was examined from 9 kHz to the 10^{th} harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

10.3 Radiated Emissions Test Results

10.3.1 Radiated Emissions Digital Test Data

Table 10-1: Digital Unintentional Radiated Emissions Test Data

Temperature: 27.2°C Humidity: 44%									
Emission Frequency (MHz)	Antenna Polarity (H/V)	Azimuth (°)	Height (m)	Emission Level (dBµV)	Site Factor (dB)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
41.852	V	0	1.0	44.6	-17.2	27.3	40.0	-12.7	Pass
58.325	V	0	1.0	51.6	-22.9	28.7	40.0	-11.3	Pass
67.150	V	0	1.0	50.4	-23.2	27.2	40.0	-12.8	Pass
76.950	V	0	1.0	55.3	-22.3	33.0	40.0	-7.0	Pass
120.000	V	0	1.0	42.2	-16.3	25.9	43.5	-17.6	Pass
144.000	V	0	1.0	34.0	-17.4	16.5	43.5	-27.0	Pass
192.007	V	0	2.0	42.1	-18.7	23.4	43.5	-20.1	Pass
217.100	V	135	3.0	42.4	-18.5	23.9	46.0	-22.1	Pass
240.000	V	0	3.0	47.1	-15.9	31.2	46.0	-14.8	Pass
247.977	V	45	2.0	40.3	-15.0	25.3	46.0	-20.7	Pass
455.875	V	0	3.0	42.3	-8.7	33.6	46.0	-12.4	Pass
527.230	H	45	3.0	35.7	-6.9	28.8	46.0	-17.2	Pass

10.3.2 Radiated Emissions Harmonics/Spurious Test Data

Table 10-2: Radiated Emissions Harmonics/Spurious - 2405 MHz Average Detector

Emission Frequency (MHz)	Analyzer Reading Average Detector (dBµV)	Site Correction Factor (dB/m)	Average Emission Level (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4810.0	3.7	34.0	37.7	54.0	-16.3
12025.0	-10.8	44.8	34.0	54.0	-20.0
19240.0	-10.3	53.6	43.2	54.0	-10.8

Table 10-3: Radiated Emissions Harmonics/Spurious - 2405 MHz Peak Detector

Emission Frequency (MHz)	Analyzer Reading Peak Detector (dBµV)	Site Correction Factor (dB/m)	Peak Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4810.0	10.3	34.0	44.3	74.0	-29.7
12025.0	-0.4	44.8	44.4	74.0	-29.6
19240.0	0.3	53.6	53.8	74.0	-20.2

Table 10-4: Radiated Emissions Harmonics/Spurious - 2440 MHz Average Detector

Emission Frequency (MHz)	Average Analyzer Reading (dBµV)	Site Correction Factor (dB/m)	Average Emission Level (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4880.0	2.2	34.0	36.2	54.0	-17.8
7320.0	-7.1	36.5	29.4	54.0	-24.6
12200.0	-10.3	44.8	34.5	54.0	-19.5
19520.0	-10.3	54.0	43.6	54.0	-10.4

Table 10-5: Radiated Emissions Harmonics/Spurious - 2440 MHz Peak Detector

Emission Frequency (MHz)	Analyzer Reading Peak Detector (dBµV)	Site Correction Factor (dB/m)	Peak Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4880.0	9.1	34.0	43.1	74.0	-30.9
7320.0	0.9	36.5	37.4	74.0	-36.6
12200.0	0.4	44.8	45.2	74.0	-28.8
19520.0	-0.6	54.0	53.3	74.0	-20.7

Table 10-6: Radiated Emissions Harmonics/Spurious - 2480 MHz Average Detector

Emission Frequency (MHz)	Average Analyzer Reading (dBµV)	Site Correction Factor (dB/m)	Average Emission Level (dBµV/m)	Average Limit (dBµV/m)	Average Margin (dB)
4960.0	1.1	34.1	35.2	54.0	-18.8
7440.0	-9.8	36.6	26.8	54.0	-27.2
12400.0	-10.1	48.0	37.8	54.0	-16.2
19840.0	-10.0	54.2	44.1	54.0	-9.9
22320.0	-9.9	56.1	46.2	54.0	-7.8

Table 10-7: Radiated Emissions Harmonics/Spurious - 2480 MHz Peak Detector

Emission Frequency (MHz)	Analyzer Reading Peak Detector (dBµV)	Site Correction Factor (dB/m)	Peak Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Peak Margin (dB)
4960.0	8.4	34.1	42.5	74.0	-31.5
7440.0	-0.5	36.6	36.1	74.0	-37.9
12400.0	0.2	48.0	48.1	74.0	-25.9
19840.0	0.0	54.2	54.1	74.0	-19.9
22320.0	0.8	56.1	56.9	74.0	-17.1

Table 10-8: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901663	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9 kHz - 30 MHz)	881056/062	08/12/2023
900878	Rhein Tech Laboratories	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901729	Insulated Wire Inc.	KPS-1503-3150-KPR	SMK RF Cables 20'	NA	12/06/2022
901242	Rhein Tech Laboratories	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	08/05/2024
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	08/05/2024
900323	EMCO	3160-07	Horn Antenna (8.2 - 12.4 GHz)	9605-1054	08/05/2024
900356	EMCO	3160-08	Horn Antenna (12.4 - 18 GHz)	9607-1044	08/05/2024
901218	EMCO	3160-09	Horn Antenna (18 - 26.5 GHz)	960281-003	08/05/2024
901773	Rohde & Schwarz	FSW50	Spectrum Analyzer	101021	02/02/2025

Measurement uncertainties shown for these tests are expanded uncertainties expressed at 95% confidence level using a coverage factor k = 2. MU = ±4.6 dB.

Test Personnel:

Khue Do		August 11 – 12, 17, 2022
Test Engineer	Signature	Dates of Test

11 Conclusion

The data in this measurement report shows that the EUT as tested, Hunter Engineering Company Model 146-78-1, FCC ID: LS3-146781, IC: 2938A-146781, complies with the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations and ISED Canada RSS-247.